

the river was rising rapidly and full of floating ice on the 15th; from the 16th to the 18th large quantities of floating ice were noted.

Large fields of floating ice were reported in the river at Buffalo, N. Y., on the 30th. Lake Erie was free from ice at Erie, Pa., on the 25th. On the 28th a steam barge left Cleveland, Ohio, for Kellys Island; this was the first departure of the season. On the 29th the "City of Detroit" arrived at Cleveland from Detroit, Mich.; this was the first arrival of the season. Ice in the Maumee River began to move at Toledo, Ohio, at 5 a. m. of the 10th; at 10 a. m. a small gorge formed at the lower end of the city. On the 11th the gorge broke, and the ice passed out. On the 21st a steamer arrived from Monroe, Mich.; this was the first arrival of the season at Toledo. Floating ice was noted in the river at Detroit, Mich., on the 18th to 21st, 26th, and 27th. The "City of Detroit" cleared for Cleveland on the 29th; this was the first departure of the season. At the close of the month the western part of Lake Saint Clair was reported clear of ice. On the 1st a steamer broke the ice between Port Huron and Sarnia and resumed her trips. On the 9th the Saint Clair River was open from Lake Huron to Marysville; 14th, Saint Clair River open from Lake Huron to Saint Clair; 21st, 22d, and 25th, large quantities of floating ice in the river at Port Huron; 25th, the American shore of Lake Huron free from ice about Port Huron; on the Canadian shore the ice was firm. On the 25th a steamer left Manistee, Mich., for Frankfort, Mich.; this was the first departure of the season. On the 31st very little ice was visible from Manistee. On the 8th a brisk easterly wind drove the ice out of the harbor at Grand Haven, Mich., and a steamer which had been fast in the ice several days left for Milwaukee. On the 15th the harbor continued open, but an immense field of ice extended off the piers. On the 30th the

harbor was blocked by ice. On the 31st southerly winds drove the ice northward, and the harbor opened. An enormous ice gorge was reported in the river above the dam at Milwaukee, Wis., on the 13th.

FLOODS.

Destructive floods resulted from ice gorges in rivers and streams in New York, Pennsylvania, Michigan, Wisconsin, and Nebraska. The night of the 12th ice in the Hudson River broke and gorged at Albany, N. Y. The water rose rapidly, reaching a higher point than in 1861, and rose 2 feet above the high water mark of 1887. During that date streets in low-lying parts of Albany and low lands about the city were flooded, and large quantities of goods stored in cellars and the lower floors of mercantile houses were damaged. The afternoon of the 10th ice in the Genesee River broke and gorged near Mount Morris, N. Y., and parts of that village and adjacent low ground were submerged. On the 13th cellars along the Genesee River in Rochester, N. Y., were flooded. The water ceased to rise at Rochester the early morning of the 14th. On the 10th water from the Susquehanna River covered the flats between Wilkesbarre and Kingston, Pa. From the 13th to the 19th floods occurred in the rivers and streams of Lower Michigan. At points along the Grand River the water was reported the highest in many years. Destructive floods were also reported in Wisconsin. In Nebraska streams overflowed their banks, many bridges were washed away, and washouts on railroads interrupted railroad traffic. During the early part of the third decade of the month streams in the San Joaquin Valley and in southwestern California were swollen to a dangerous height. Towns and villages and large tracts of cultivated land were submerged.

ATMOSPHERIC ELECTRICITY.

THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 22, on the 23d and 24th; in 16 on the 8th; in 15 on the 22d; in 14 on the 14th; in 11 on the 3d, 9th, and 11th; in 10 on the 2d and 10th; in 9 on the 20th and 21st; in 8 on the 27th; in 7 on the 13th, 15th, 25th, and 26th; in 6 on the 12th and 16th; in 5 on the 17th and 28th; in 4 on the 4th and 7th; in 3 on the 30th; in 2 on the 1st and 31st; and in one on the 5th, 6th, 18th, and 29th. The 19th was the only date on which thunderstorms were not reported.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 15, in Florida and North Carolina; on 14 in Mississippi; on 13 in Texas; on 11 in Missouri; on 10 in Arkansas, Louisiana, and Virginia; on 8 in Illinois, Kansas, Michigan, and Tennessee; on 7 in Alabama, Georgia, Indiana, Iowa, Kentucky, Ohio, and Wisconsin; on 6 in Minnesota and New York; on 5 in Nebraska and West Virginia; on 4 in Connecticut and South Carolina; on 3 in New Hampshire, New Jersey, North Dakota, Oklahoma, and Pennsylvania; on 2 in Indian Territory, Maine, Massachusetts, and Vermont; and on one in Delaware, District of Columbia, Maryland, Rhode Island, and South Dakota.

West of the Rocky Mountains thunderstorms were reported in Arizona on the 6th; in California on the 8th to 11th, 18th, and 20th; in Colorado on the 7th and 22d; in Nevada on the 20th and 21st; in Oregon on the 5th, 7th, 8th, 10th, 11th,

15th, 20th, and 27th; in Utah on the 21st. In states and territories other than those named no thunderstorms were reported.

AURORAS.

Auroras were reported as follows: 6th, Crook, Oregon; 7th, Fergus Falls, Minn.; Mingusville, Mont.; Fort Buford, N. Dak.; Medford and Shawano, Wis. 8th, Havre, Mont. 13th, Galva, Ill.; Turin, N. Y.; Appleton, Wis. 14th, Amana and Cresco, Iowa; Morton, Kans.; Sault Ste. Marie, Mich.; Clear Lake, Collegeville, Fergus Falls, Maple Plain, Saint Olaf, and Wilmer, Minn.; Havre, Mont.; Santee Agency, Nebr.; Ashley, Bowdle, Fort Stevenson, Grand Forks, Napoleon, Sykeston, and Woodbridge, N. Dak.; Barron, Butternut, Grantsburg, Haywards, Medford, Reedsburg, and Valley Junction, Wis. 15th, North Billerica, Mass.; Sault Ste. Marie, Mich.; Sandy Lake Dam, Minn.; Havre, Mont.; New Brunswick, N. J.; Brookline, N. H.; Honeymead Brook, N. Y.; Fort Buford and Woodbridge, N. Dak.; Barron and Haywards, Wis.

16th, Gaynor, Colo.; Fort Stevenson, N. Dak.; Chelsea, Vt.; Ashland, Wis. 17th, Angola, Ind. 20th, Williamston, Mich.; Albany, Oregon. 23d, Noble, Mich.; Crook, Oregon; Harvey and Medford, Wis. 24th, Palermo, N. Y.; Lakota, N. Dak.; Ashland and Harvey, Wis. 25th, Indian Stream, Me.; Collegeville, Minn.; Lyons, N. Y.; Fort Buford and Jamestown, N. Dak.; Harvey, Wis. 26th, David City, Nebr. 27th, Moscow, Idaho; Waverly, N. Y.; Crook, Oregon. 28th, Indian Stream, Me.; Sault Ste. Marie, Mich. 30th, Ashland, Va.; Harvey, Wis. 31st, Blakeville, Iowa; Parkersburg, W. Va.